Agilent 1290 Infinity Binary LC and Agilent 1290 Infinity Quaternary LC with Intelligent System Emulation Technology

Infinitely better method transfer

1290

The Measure of Confidence

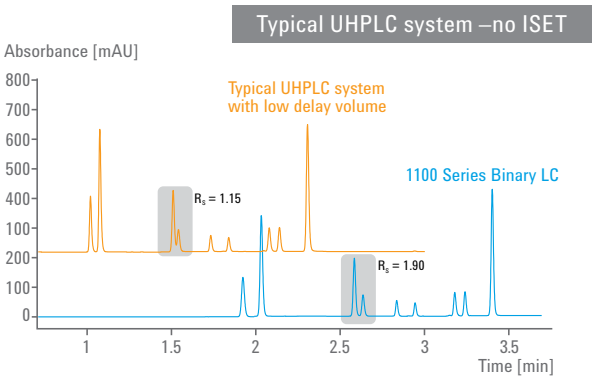
Agilent Technologies

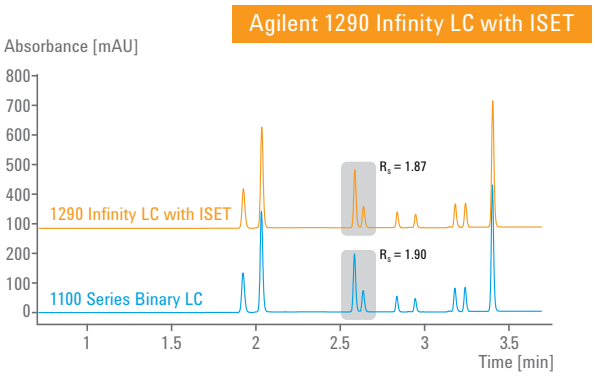
INFINITELY BETTER METHOD TRANSFER

Do you run methods developed on other HPLC or UHPLC systems? Are you concerned about getting different resolution and retention times? Are you reluctant to change original method parameters or instrument hardware?

Here's the solution: **Intelligent System Emulation Technology (ISET)** from Agilent!
The Agilent 1290 Infinity LC with ISET is not only the most powerful but also the most adaptive UHPLC system available – executing any legacy HPLC or latest UHPLC method while delivering the same chromatographic results – all through a single mouse click!

Here's the difference





Achieve higher productivity for method development

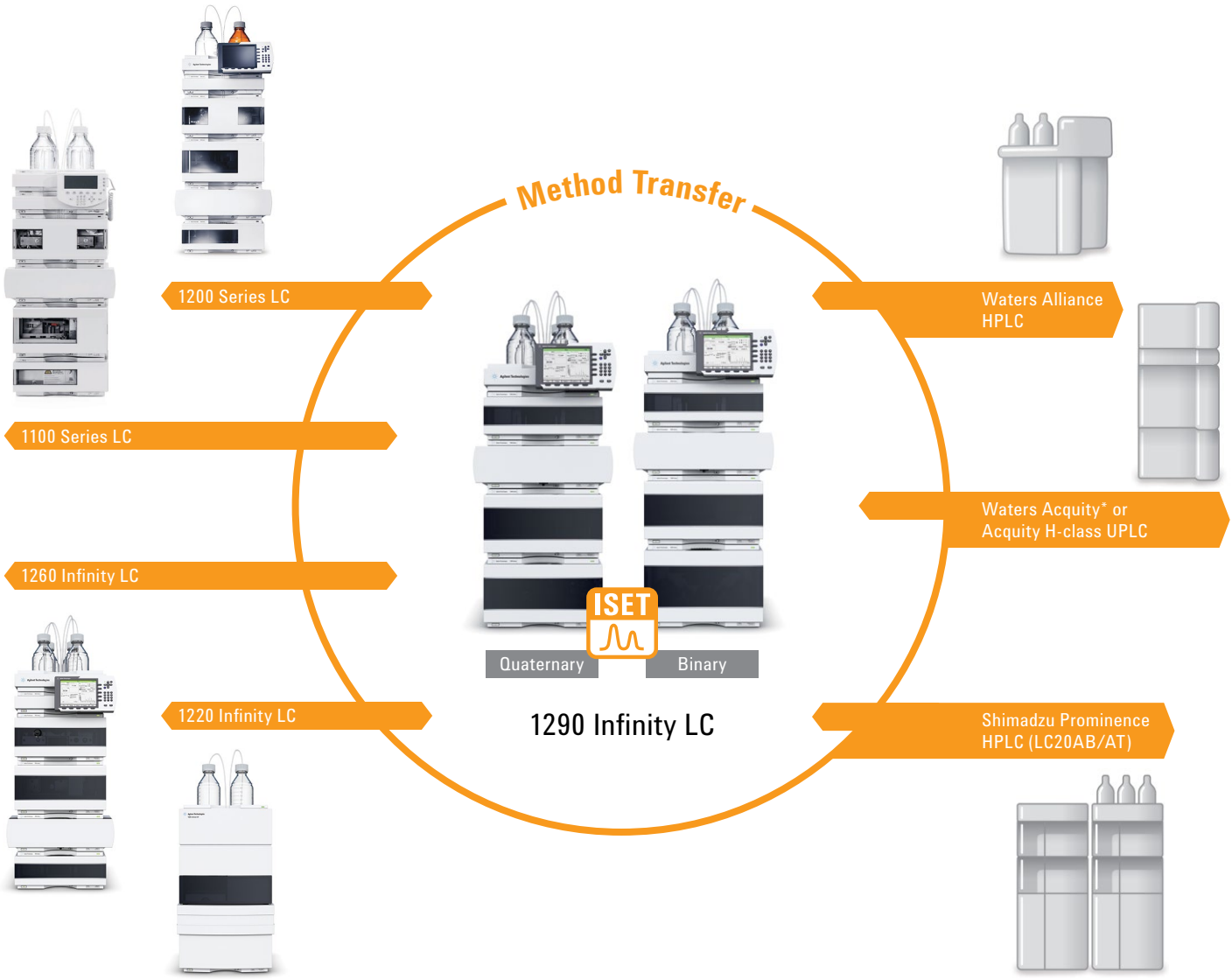
Speed up your method development with UHPLC performance and then fine-tune your method by emulating the target system – and be confident that the method will run as intended.

Accelerate your instrument-to-instrument method transfer

No more method transfer problems! Simply emulate the LC system on which the original method was developed – with a single mouse click.

Minimize your instrument-related costs

Run your legacy methods with ISET while taking full advantage of the UHPLC speed, resolution and sensitivity of the 1290 Infinity LC. No need to maintain your old legacy LC systems!



*The Waters Acquity UPLC can only be emulated by the 1290 Infinity Binary LC System

Benefit from the flexibility of the 1290 Infinity LC with ISET:

- Emulate other HPLC *and* UHPLC instruments through a single mouse click
- Run existing HPLC *and* UHPLC methods without modifying your method or system
- Achieve same retention times and peak resolution for infinitely better method transfer

Learn more: www.agilent.com/chem/ISET

THE CHALLENGES OF METHOD TRANSFER

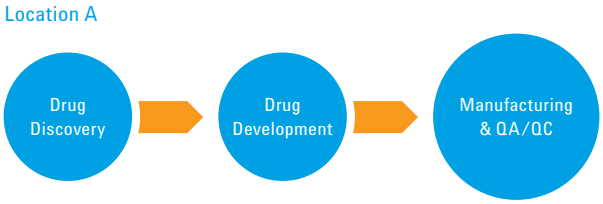
Instrument-to-instrument method transferability is an important topic for all laboratories – throughout all industries – where LC methods are transferred between different departments and locations with different LC instruments.

Method transfer in the pharmaceutical industry

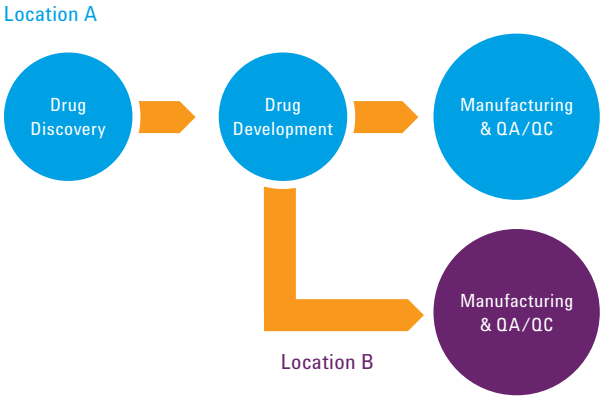
The transfer of analytical methodology between research and development departments, contract research organizations, and manufacturing is an essential step in the development of a new pharmaceutical product.

Several hundred FDA observations and a proposal for a new chapter in USP 1224 "Transfer of analytical procedures" emphasize the actuality and importance of this topic.

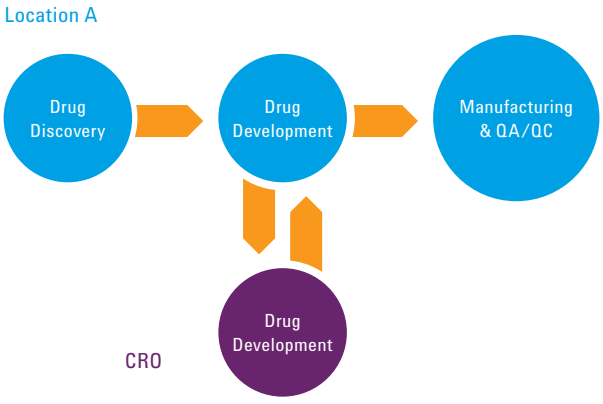
Workflow at a single location



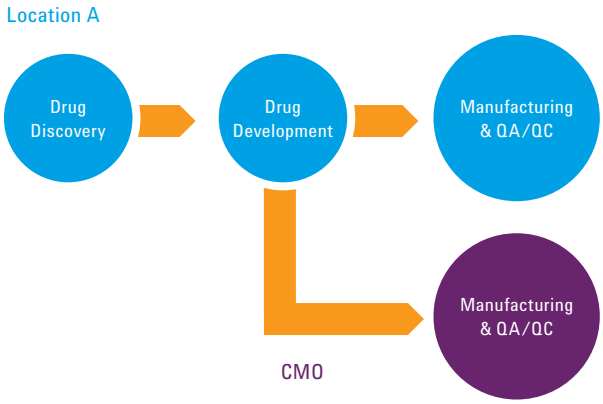
Workflow between two locations within enterprise



Workflow between pharmaceutical enterprise and contract research organization



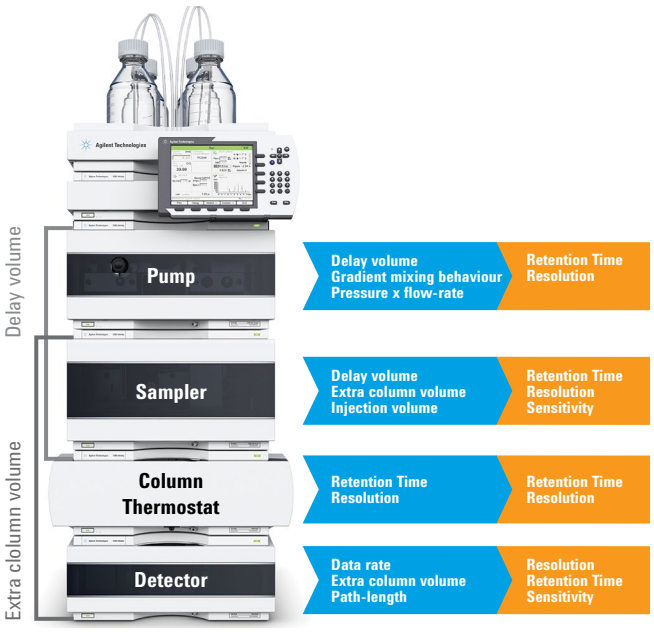
Workflow between pharmaceutical enterprise and contract manufacturing organization



Which parameters affect method transfer?

Design differences between LC instrumentation – such as power range, delay volume, mixing behavior, temperature control, extra column volume and detector cell design – all affect the ability to transfer a method from one system to another.

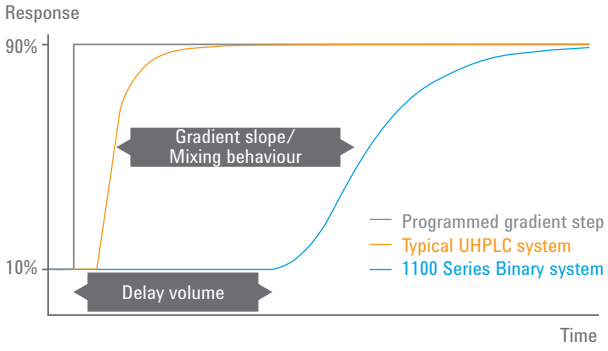
Agilent has always offered solutions that facilitate seamless method transfer between different Agilent LC platforms. Now, the 1290 Infinity LC with ISET extends this capability by facilitating method transfer between HPLC and UHPLC systems with different instrument designs from different manufacturers – all through a single mouse click!



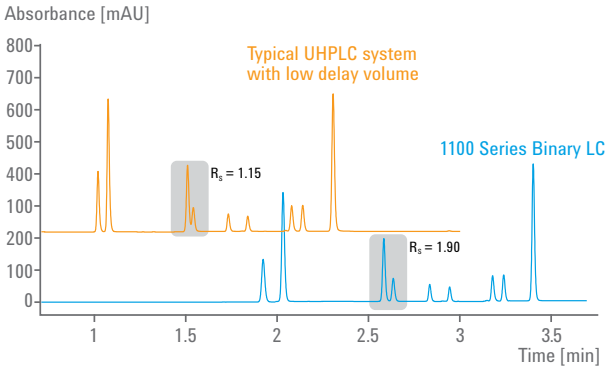
A wide range of instrument parameters have a direct impact on the retention times, resolution and sensitivity of a separation.

The impact of delay volume and gradient mixing

The delay volume of an LC system determines how fast the mixed solvents reach the column. Further, the mixing behavior influences the gradient profile. Both these factors – delay volume and mixing behavior – are functions of the system design. The consequences for method transfer are differences in retention times and sometimes in resolution.



Comparison of delay volumes and gradient mixing behaviors between a typical UHPLC system and an 1100 Series binary LC using a tracer experiment. On a typical UHPLC system the mixed solvents reach the column much earlier, and the set composition is also achieved earlier due to the steeper gradient slope.



Different solvent compositions at the column due to different delay volumes and gradient mixing behaviors result in different retention times and resolutions.

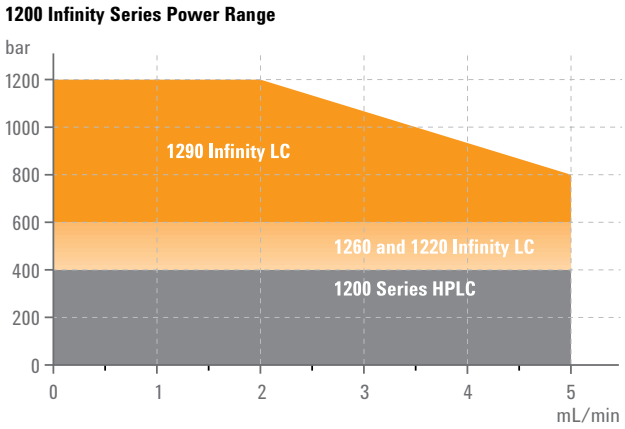
Column: Poroshell 120, 3 x 50 mm (2,7 µm). Flow rate: 0.85 mL/min.
Mobile phase: Water, Acetonitrile.
Gradient: 0 min (10 % Acetonitrile), 3 min (90 % Acetonitrile)

ISET – FOR INFINITELY BETTER METHOD TRANSFER

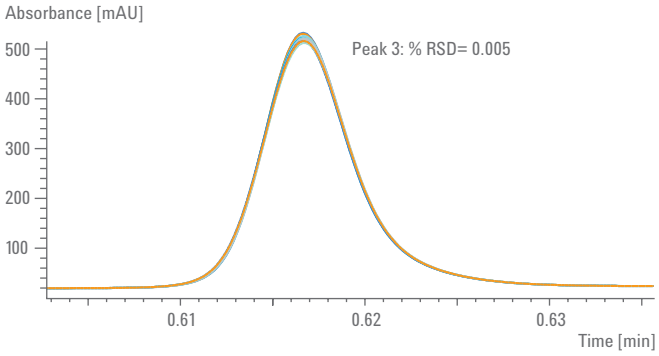
ISET – Intelligent System Emulation Technology – makes the Agilent 1290 Infinity LC the most adaptive UHPLC system available. It can execute any legacy HPLC or latest UHPLC method and deliver the same chromatographic results without the need to change the original method or modify the instrument hardware. This new technology is based on two Agilent innovations: best-in-class performance and a revolutionary emulation algorithm.

Best-in-class performance of the 1290 Infinity LC

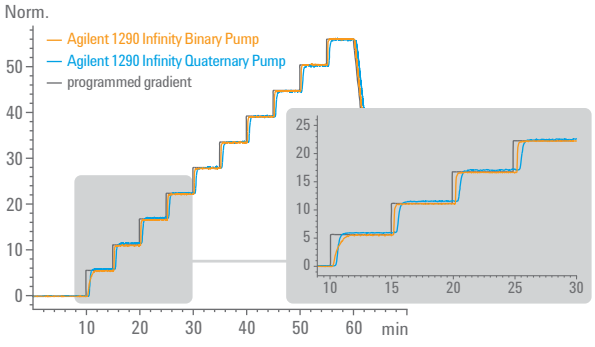
The 1290 Infinity LC – with its broad power range, unmatched flow and composition accuracy, ultra-low delay volume, and superior sensitivity – delivers the key requirement for the implementation of ISET.



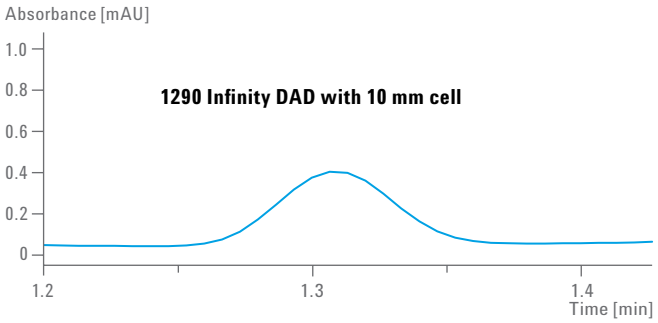
The wide power range ensures that the 1290 Infinity LC can execute both HPLC and UHPLC methods with narrow bore to standard bore columns.



A key requirement for deployment of ISET is superior performance as illustrated here in terms of retention time precision for the 1290 Infinity Binary Pump.



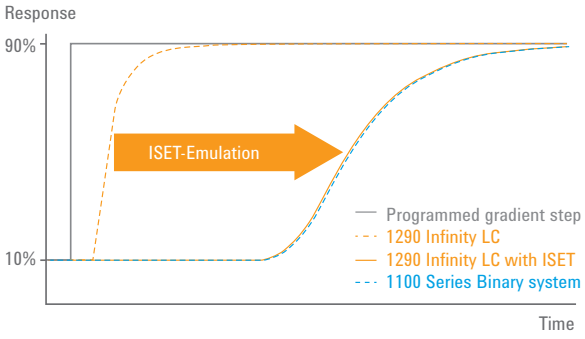
The 1290 Infinity Binary and Quaternary Pumps deliver excellent gradient performance over the entire range – even with 1% steps at low percentages (1-10%) of organic solvent.



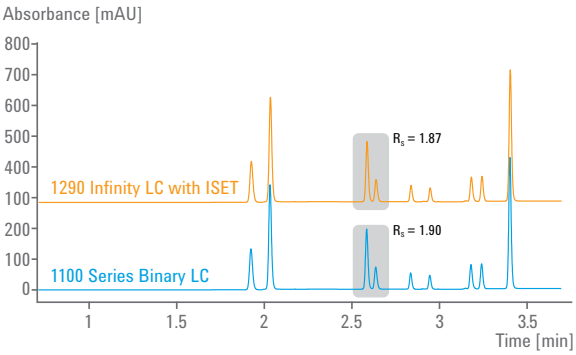
Highest UV sensitivity ensures that no peaks are lost during method transfer. In this example, the 1290 Infinity DAD with a 10 mm Max-Light cartridge cell achieves an LOD of 284 fg for anthracene at a noise level of ± 2.4 µAU.

Revolutionary emulation algorithm

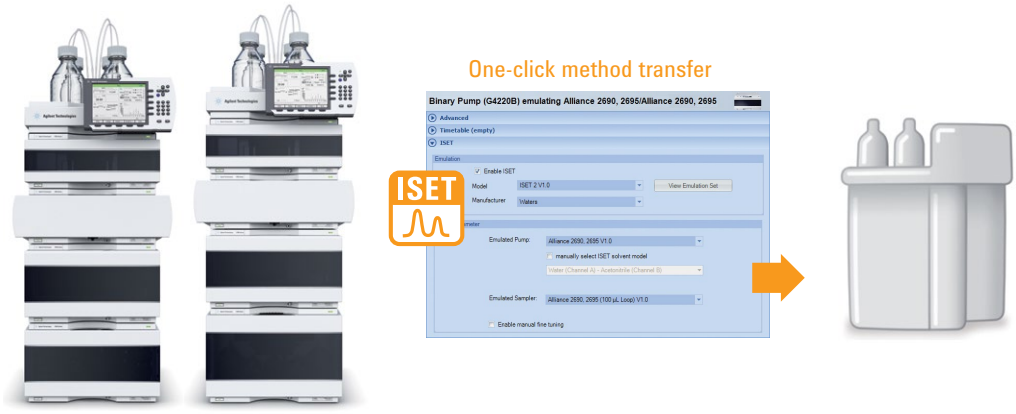
With exact knowledge about the system behavior of a selected LC instrument, ISET creates an emulation function so that the 1290 Infinity LC delivers the same gradient conditions as the selected LC – no shifts in retention times, and no changes in resolution.



The 1290 Infinity LC with ISET delivers exactly the same gradient as the 1100 Series binary LC by emulating the delay volume and mixing behavior.



The result: same retention times and same resolution, without modifying the instrument or original method.



Select your hardware configuration and through a single mouse click the 1290 Infinity Binary or Quaternary LC will deliver the same chromatographic results as the selected LC instrument.

Learn more: www.agilent.com/chem/ISET

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Published in the USA, November 1, 2013
5991-3369EN

Agilent Technologies